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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04Q 7/22, 7/32, H04M 3/44 — A2

(11) International Publication Number: **WO 98/23108**

(43) International Publication Date: 28 May 1998 (28.05.98)

(21) International Application Number: PCT/EP97/06440

(22) International Filing Date: 18 November 1997 (18.11.97)

(30) Priority Data:
964621 19 November 1996 (19.11.96) FI

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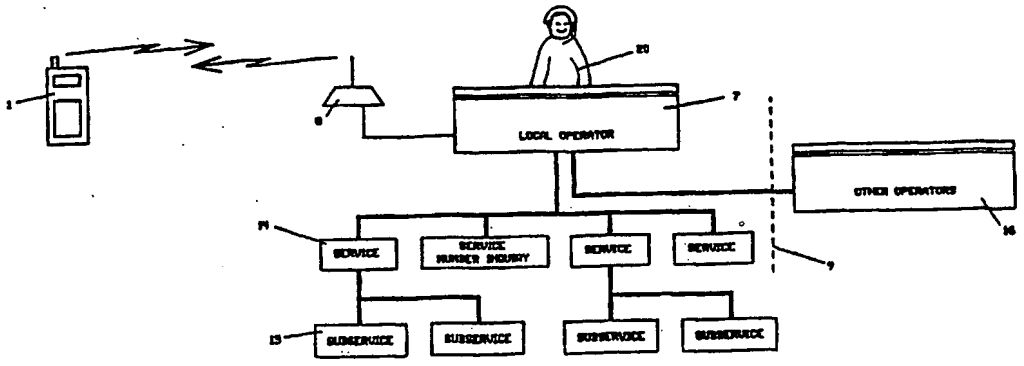
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: METHODS AND APPARATUS FOR ACCESSING TELEPHONE NUMBERS



(57) Abstract

The present invention relates to a method for accessing a specific telephone number in a net of a local operator by a mobile telephone. According to the method predetermined telephone numbers of various local operators and/or local services are stored into memory means of the mobile telephone unit and a proper predetermined local telephone number(s) is selected among said telephone numbers stored into the memory means of the mobile telephone. Said selection is performed by control means of the telephone in accordance with the local operator used at the moment. Said predetermined telephone number is activated by activating means provided on the mobile telephone, wherein the user of the mobile telephone is facilitated to access the specific telephone number without any knowledge of the actual telephone number. The invention relates further to a mobile phone and to an arrangement realizing the inventive method.

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METHODS AND APPARATUS FOR ACCESSING TELEPHONE NUMBERS

FIELD OF THE INVENTION

The present invention relates to methods for accessing specific numbers and/or services of a local operator running a local telephone network. More precisely, the invention is related to methods for a transparent access of the specific local telephone numbers and/or services accessible through a local operator.

The invention relates further to an apparatus and an arrangement realizing the inventive method for accessing a specific telephone number.

BACKGROUND OF THE INVENTION

Mobile telephones, such as those adapted to use a digital or an analog standard, such as GSM, PDC, AMPS, DAMPS, NMT and/or TDMA or CDMA technology or similar, are widely used throughout the world. The required apparatus and services, such as the mobile telephone networks comprising base stations, exchanges, operator desks, switches etc. are usually provided and run in each country or geographical area by local operators. One country may have only one operator running the net, but there may also be several competing operators in the same directory area. In the following description the term 'local operator' is generally intented to mean one independent operator running a PLMN (Public Land Mobile Network) or similar in one geographical area or directory area.

The operators of different countries or geographical areas using the same standard and protocol have made agreements permitting the user of a single mobile telephone to use the telephone even in the networks of other operators, eg. by roaming. Thus the user is enabled to use the telephone even when being, for instance, abroad or otherwise outside the network actually subscribed. This possibility is especially welcomed by those who have to move around an area having several independent operators, eg. cross the borders often, and who thus have to change from one operator's network to another. Central Europe is mentioned as an example of such area and business travelers as an example of users who are frequently moving from one operator's network to another.

Even though said agreements allow the user to use the local operator network for the telephone calls in most countries and operator areas, a common problem for mobile telephone users lies on the fact that they do not know specific local ie. "foreign" telephone numbers for the operator and/or different services in that directory area. There are no arrangements to facilitate the users to locate specific local telephone numbers when they are outside their own home network. The local numbers referred herein could be such as private or company numbers for mobile telephones, ordinary telephones, fax machines, operator related numbers or numbers for police, emergency, first aid, fire station etc. These could, of course, be found from a telephone directory, if such were immediately available. However, this is not usually the case for a user who is in a street, train, car or similar place.

In case a telephone directory or other directory of important numbers is available, it may still contain outdated telephone numbers and may not contain information about the latest possible services and changes in the network. The updated numbers could, however, be easily provided by the local operator if the user only could know the number of the operator and thus could call there. The same is true for the other services provided by the local operator, these services provided by a modern telecommunications network being per se known by the skilled person. In addition, the character of the service(s) may vary from one network to another, and thus the user might need a readily accessible guidance to help him or her with the use of the services. In the following the term 'services' is intented to include such numbers as for 'emergency', 'police', 'first aid', 'fire station', 'help', 'guidance' and so on, the numbers whereof do vary from country to another.

US Patent 5,509,060 to Hall et al. discloses a method for accessing telephone services to which the user is a subscriber and entitled to in his or her own country, ie. in the "home network", even in case the user is temporarily using a network of a foreign operator. The method allows the user having a personal identification code to gain access to communications channels by instructions given in his or her own language. In other words the method allows the user to contact the central processing node of the home operator from anywhere in the world. The method utilizes a central processing database, and the used telephone apparatus connected to the local foreign network do not have any special functions or features.

SUMMARY OF THE INVENTION

The prior art disclosures do not remove the problems of a user who does not have any knowledge at all of the local telephone numbers, but who would like to access with ease

the local operator and/or other local services by his or her own mobile telephone. The above mentioned US disclosure does not even include any teaching of how to facilitate the use of a mobile telephone.

In view of the above, it is an object of the present invention to overcome the disadvantages of the prior art solutions and to provide a totally new type of solution for the access of operator (or switch) related local telephone numbers and/or services.

An object of the present invention is also to provide a method and apparatus by means of which a mobile telephone is capable of providing the required means for an access to a local operator and/or local services.

A further object of the present invention is to provide a method and apparatus by means of which a local operator is capable of providing a mobile telephone with necessary information needed for an access to the local operator and/or local services by said mobile telephone.

A further object of the present invention is to provide a method and an apparatus, by means of which the user is provided with the latest updated information about the local numbers and/or services and/or about any other matter the user might be interested to have an advise.

A still further object of the present invention is to provide a method and an apparatus, by means of which a user of a mobile phone is provided with a possibility to choose a preferred language by which the service should be given.

Other objects and advantages of the present invention will be brought out in the following part of the specification taken in conjunction with the accompanying drawings.

According to one embodiment of the present invention a method for accessing a specific telephone number in a network of a local operator by a mobile telephone unit comprises the following steps: Predetermined telephone numbers of various local operators and/or local services are stored into memory means of the mobile telephone unit. A proper predetermined local telephone number or telephone numbers is then selected among said telephone numbers stored into the memory means of the mobile telephone unit, said selection being performed in accordance with the local operator used at the moment by control means of the telephone unit. Said predetermined telephone number is activated by acti-

vating means provided on the mobile telephone unit, wherein the user of the mobile telephone unit is facilitated to access the specific telephone number without any knowledge of the actual telephone number.

According to an alternative embodiment a method for accessing a specific telephone number in a network of a local operator by a mobile telephone unit comprises the steps of transmitting a signal from the mobile telephone unit to the local operator network informing the network of a mobile telephone entering the net, registering and switching on said mobile telephone unit entering the network of the local operator by the switching means of the local operator, transmitting a predetermined telephone number or numbers to the mobile telephone unit by the network of the local operator, storing said transmitted telephone number or numbers to memory means of the mobile telephone unit, and activating said stored telephone number or numbers when a need to access a specific local telephone number exists.

A mobile telephone unit according to the present invention comprises memory means for storing predetermined telephone numbers of various local operators and/or local services, control means for determining the used operator and for selecting a proper predetermined local telephone number or numbers among said numbers stored into the memory means of the mobile telephone unit in accordance with the local operator determined to be used at the moment, activating means for activating said predetermined telephone number or telephone numbers stored into the memory means, wherein the user of the mobile telephone unit is facilitated to access the specific predetermined telephone number without any knowledge of the actual telephone number.

According to the present invention, an arrangement in mobile telephone networks used by at least one mobile telephone unit is such that a local network comprises switching means of a local operator controlling the local net, means for registering and switching on a mobile telephone unit as it enters the local net, means for transmitting a predetermined telephone number or numbers used in the local network to said mobile telephone unit entered to the local net, and wherein the mobile telephone unit comprises memory means in the mobile telephone unit for storing said telephone number or numbers transmitted by the local net, and activating means enabling the use of said stored telephone number or numbers when a need to access the predetermined telephone number exist.

According to a preferred embodiment of the present invention it is utilized in connection with digital mobile telephones. However, the invention is not intended to be restricted to this kind of telephones only.

Several advantages are obtained by means of the present invention. The solution provides a simple, reliable and transparent manner for the selection of and access to predetermined numbers and/or services and/or functions run by a local operator. The user of the telephone does not need to have any knowledge of the local telephone numbers, but will have a standardized method for accessing desired telephone numbers and/or services. The user moving from the area of one operator to the area of another operator is allowed to use exactly the same procedure in both networks to access the local operator and/or services provided by the local networks. A benefit for the local operators is that they are likely to receive more calls to the service numbers, which usually are liable for charges, since they will be more readily reachable by "foreign" users. A further benefit is that the operators are able to provide updated information about the latest changes in telephone numbers and/or latest new telephone numbers, and thus can provide a better service.

In the following the present invention and the other objects and advantages thereof will be described in an exemplifying manner with reference to the annexed drawings, in which similar reference characters throughout the various figures refer to similar features. It should be understood that the following description is not meant to restrict the invention to the specific forms presented in this connection but rather the present invention is meant to cover all modifications, similarities and alternatives which are included in the spirit and scope of the present invention, as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic view of a mobile telephone according to an embodiment of the present invention;

Figure 2 is a schematic view of a mobile telephone according to an alternative embodiment of the present invention;

Figure 3 is a schematic view of the operational principles according to a further embodiment of the present invention;

Figure 4 is a schematic view of the principles of the invention according to one embodiment; and

Figure 5 is a schematic presentation of an arrangement according to the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

The invention can be realized by alternative general methods, one possible method and required apparatus for realizing it being described in more detail with reference to figures 1 and 2 and an alternative method and required apparatus being described in more detail with reference to figures 3 to 5.

A schematic view of figure 1 shows a mobile telephone 1 according to one embodiment of the present invention. The telephone 1 comprises a housing 2, a display 3, control buttons 4 and an antenna 5. For the reasons of clarity, the essential internal parts of the mobile telephone 1, such as circuit boards including software-based control means, as well as memory means, such as a fixed internal memory or a SIM card memory, are shown only by a chip 6 inside a circle which is indicating that said chip (and other internal parts) is placed inside the housing 2. All these components of a mobile telephone are per se known by the skilled person, and thus not explained in more detail herein.

The inventive telephone 1 of figure 1 comprises a special button or keying means 10. These can also be referred to as "fast key" or "operator fast key", since the keying means 10 is arranged to activate the request to access directly the local operator, or another telephone number preset to be automatically accessed by pressing said "fast key" 10. The telephone 1 is provided with control means, such as software, which is adapted to transmit a special number sequence or other code to the local operator net, and thus to the local switch, to activate a direct access of the caller to the operator, which may, for instance, be in the form of a human or computerized operator desk or a combination of these.

According to the embodiment of figure 2 the special key 10 of figure 1 is replaced by a MENU-choice. A MENU-choice is a feature which is per se known by the skilled person, being a part of the mobile telephone control program. Possible MENU-choices of a conventional mobile telephone are such as MEMORY, MESSAGE etc.

From the above the embodiment of Fig. 1 might be called as a hardware-based solution (Hardware Switch Activated Fast Key) and the embodiment of Fig. 2 as a software-based solution (Software Switch Activated Fast key) for activating the access, ie. keying the requested telephone number. However, it should be noted that other known means for the activation of the access can also be used, a touch screen and a voice activation given as examples of such alternative methods. In the latter the activation may comprise an use of voice recognition means which are preset to recognize an activating word, such as 'help'

or 'operator'. In addition to the above, the numbers can be arranged to be selected by means of fast access dialling, where the activation of an access to a specific number or service includes dialling a same dedicated short or abbreviated number in each country. For instance, by dialling 111 for 'operator', 112 for 'emergency', 113 for 'voice mail' etc. provides an access to a similar service in each directory area despite the fact that the actual numbers for these do vary from one directory area and/or country to another.

As explained above, the mobile telephone units 1 of Figs. 1 and 2 are arranged to send a specific signal, eg. a number sequence or a code signal, to the local operator switch means after this function has been activated eg. by pressing fast key 10 or selecting appropriate MENU-choice. To be able to perform this, the telephone 1 comprises memory means 6 for storing information about various different local numbers, such a direct number for the local human operator. The telephone further comprises software-based control means for controlling the functions of the telephone and the fixed memory means. As the telephone enters the network of a new local operator, the control means will detect the operator and amend the number sequence to be used accordingly.

To give an example of the above, in case the 'emergency' has been chosen to be automatically preselected in accordance with the country the mobile telephone is in, in Finland the telephone will have number 112 as a chosen one, and if the telephone enters USA, this number will be automatically changed to 911 without any additional measures, presuming that the mobile telephone is otherwise capable of operating in both countries. The amendment will be accomplished by the software of the control means.

The information stored in the memory means can, of course, be updated, if deemed necessary, which might be the case as new countries, directory areas or local networks will enter the system and/or number changes occur. However, this is a minor operation once the base schedule of various numbers in various countries has been created and stored into said memory means.

Figure 3 is a schematic representation of an alternative embodiment. A vehicle including a mobile telephone unit 1 crosses border line 9 which in this case equals with the local operator area and thus enters a network of a local operator controlled by a switch means 7. The mobile telephone unit 1 informs the local operator ie. the switch means 7 of said entrance by sending a signal 11 to the local operator switch 7 through a base station 8. The HLR (Home Location Register) or VLR (Visitor Location Register) or functionally similar part of the switch 7 will register any new mobile telephone unit entering the

network either because of roaming or switching on the telephone after having already entered the network and/or communicate at this stage with the home operator of the mobile phone unit 1 to receive any additional information which might be required.

At this point a predetermined telephone number or several numbers, such as direct access to a human operator, to directory inquiry service and/or 'emergency', etc., will be transmitted back to mobile telephone unit 1 by signal 13. The number(s) will then be stored into the memory means, such as SIM card or fixed memory or random memory means of the mobile telephone unit 1 to be used by the control means or program in an appropriate manner, as explained above in connection with figs. 1 and 2.

Thus the difference when compared to the embodiment of figs. 1 and 2 is that in this embodiment all various local numbers are not stored in the telephone unit but the specific local number information is received from the local operator 7 when entering the local net, and then stored for use in that specific local network. New information from another network will replace the previous information.

A possibility for this kind of updating operation by the local operator 7 is advantageous and preferred in several occasions. For instance, should the number(s) of the local operator change, the user does not need to take any measures due to these changes, but the telephone unit will transparently and automatically adopt the new numbers as it enters the net, for instance by switching the telephone on. This is even the case if changes occur in the network which the user is a subscriber, ie. in the "home" network. In addition, this kind of arrangement will save the memory of a single mobile telephone unit. On the other hand, the embodiment described in context with figs. 1 and 2 will save the operator from any additional costs and apparatus, leaving it for the users to decide whether they will have this inventive feature in their telephones or not.

It is to be noted that a fixed memory may, for instance, include general information about internationally agreed telecommunication standards or protocols. Thus the information stored therein may be more difficult to amend when compared to other possible memory types, as an amendment of the information stored therein may require amendments to the international agreements.

It is also possible to have an arrangement in which all various predetermined numbers are per se stored in the memory means of the mobile telephone unit (Figs. 1 and 2), but in which the information can be updated, if deemed necessary, essentially in a manner

described in connection with figure 3. Thus any new telephone numbers or services or any changes in the telephone numbers will be automatically transmitted into the memory means. The updating can be done, for instance, each time the telephone is switched on or periodically and/or continuously over a certain time period after a change has occurred and/or by a request from the user.

Figure 4 discloses a schematical representation of one possible operator arrangement. A mobile telephone 1 is communicating via a base station 8 directly with a human operator 20. The access to the operator 20 has been performed in accordance with the invention, ie. such that the user of telephone 1 has not selected or dialed any specific number, but has only activated the OPERATOR -function by pressing an appropriate fast key. Said human operator 20 is working at the switch 7. As the user calls directly to the operator 20, the operator is able to personally assist the caller in a desired manner. The operator may, for instance connect the caller to a requested service 14, such as number inquiries. The services 14 may, of course, have further connections to additional services or subservices 15, as shown in Fig. 4. A connection might also be done to another operator 16, such as to the 'home operator' or to an operator in a third country. The operator 20 may also advise in other matters, such as in questions relating to the use of a certain mobile telephone model or the services provided by the local network etc.

Figure 5 discloses a general schematic presentation of an arrangement according to the present invention. User's 'home network' 9' is shown down in the left hand corner of Fig. 5. The 'home operator' or more precisely the switch means 7' is operationally connected with three other 'foreign' operator switch means 7, the connection enabling a two-way traffic between the operators in a per se known manner. In Fig. 5 the local operator areas ie. networks 9 are separated by dashed lines.

A mobile phone unit 1 which is a subscriber of 'home network' 9' is shown in each of the 'foreign' ie. local networks 9. Each mobile phone unit sends a special digit sequence (#24#343&//34 in the example) to the local operator net, a form of said sequence being in accordance with an international standard, such as IMSI (International Mobile Subscriber Identity). The local networks will then perform the usual operations, such as functions related to VLR and HLR at a register means 21, as described above. At this stage the 'local network' communicates with the 'home network' so that the 'home network' will be provided with the information concerning the location of the mobile phone unit. The 'home network' provides said local operator with information relating to VLR and HLR as well as any additional necessary information about said mobile telephone 1.

Subsequent to these prior known operations the 'local network' will send back a specific telephone number to respective mobile telephone unit 1, which in turn will store said number to a random memory means thereof. In this example each local operator has a different telephone number for access, which number will then be accessed by the mobile phone unit in case the 'fast key' operation of the mobile phone is activated by the user.

In case mobile phone unit 1 in a vehicle enters into a new network (as shown by an arrow), the above procedure will be repeated. Thus the number stored into the random memory will be changed from 9833922223 to 1324354657 as the vehicle enters the new net.

Fig. 5 discloses also a situation where two networks 9 overlap at 24. In such case the telephone unit 1 will operate in accordance to the agreements made between the operators, such operation being known by the skilled person. Thus, in case one of the operators has a priority, then the number of this will also be used at said overlapping area 24 as a predetermined telephone number. As an alternative, the mobile telephone unit 1 might use a number of a local operator the user is initially switched to. The mobile phone unit 1 may also select a network having the greatest signal level as it is switched on, and thus the operator number will be set accordingly.

According to one additional feature of the invention the code signal sent by the telephone unit 1 to the local network 9 will include an information concerning a preferred language. The subscriber may choose said preferred language to be set as a constant setting by choosing among a list of following examples of commonly spoken languages: English, French, German or Spanish. The local operator 7 may be divided into number of suboperators such that the telephone number transmitted to the telephone unit 1 will provide an access to a suboperator capable of communicating with the preferred chosen language. According to a further embodiment the local switch 7 will detect the language choice, and if it is not capable of providing a service with that language, it will automatically switch the call to the 'home operator' 20'. It is also possible to choose such an alternative that the 'operator fast key' function will always connect the user directly with the 'home operator' 20'. The selection of a preferred language may alternatively be stored in the home operator switch means 7', from where the information of preferred language is transmitted to the local operator together with the VLR and HLR information.

According to one additional embodiment the service accessed by means of the present invention is 'guidance'. This service may be provided for those who are lost or otherwise

would like to receive instructions of how to go to an address they are trying to get, which would be appreciated for instance by those visiting unfamiliar big cities, such as Tokyo. The service utilizes the cells of the network 9, whereby the operator or 'telephone guide' 20 receives an information concerning an approximate position of the caller 1, who has to be in the area of the cell the call is coming from. Thus the guide 20 at the desk 7 is automatically provided with the approximate position of the caller 1, and is able to start the guidance from a correct map or similar means and is thus able to give precise instructions for the caller immediately as the call initiates. According to an alternative, each cell or a given group of cells has a telephone guide of their own, the guide being familiar with that given district, and thus having a good capability of giving guidance and instructions to the caller using the "guidance fast key" in that district. The users may find this position determining feature useful also in other connections as well, such as when calling to numbers such as 'emergency', 'first aid', 'police', 'fire station' etc.

Thus, the invention provides apparatus and methods by which a significant improvement in the area of accessing proper telephone number(s) and/or services is achieved. The invention may be defined such that the selection of the desired telephone number becomes independent from the operator area within which the mobile phone currently is while the selected number or key is always the same. It should be noted that the foregoing examples of the embodiments of the invention are not intended to restrict the scope and spirit of the invention defined in the appended claims. For instance, upon reading the above description together with the annexed drawing it will be obvious to the skilled person to use the present invention as a part of a telephone system of a global company. In this case the mobile telephone could be set to access directly to the switch of the closest branch office of the company having offices in various countries and thus having various telephone numbers.

Claims

1. Method for accessing a specific telephone number in a network of a local operator by a mobile telephone unit, comprising the steps of:
storing predetermined telephone numbers of various local operators and/or local services into memory means of the mobile telephone unit,
selecting a proper predetermined local telephone number or telephone numbers among said telephone numbers stored into the memory means of the mobile telephone unit, said selection being performed by control means of the telephone unit in accordance with the local operator used at the moment,
activating said predetermined telephone number by activating means provided on the mobile telephone unit, wherein the user of the mobile telephone unit is facilitated to access the specific telephone number without any knowledge of the actual telephone number.

2. Method for accessing a specific telephone number in a network of a local operator by a mobile telephone unit, comprising the steps of:
transmitting a signal from the mobile telephone unit to the local operator network,
subsequently registering and switching on said mobile telephone unit entering the network of the local operator by switching means of the local operator,
transmitting a predetermined telephone number or numbers to the mobile telephone unit by the network of the local operator,
storing said transmitted telephone number or numbers to memory means of the mobile telephone unit, and
activating said stored telephone number or numbers when a need to access the specific telephone number in the local operator network exists.

3. A method according to claim 1 or 2, wherein said step of activating is performed by pressing a special key on the telephone.

4. A method according to claim 1 or 2, wherein said step of activating is performed by selecting a special option from a mobile telephone menu or by using fast access dialling.

5. A method according to claim 1 or 2, wherein said step of activating is performed by voice activation.

6. A method according to any of claims 1...5, wherein said local operator is a foreign operator and said specific telephone number is a direct access to a human operator of said

foreign local operator.

7. A method according to any of claims 1...5, wherein said local operator is a foreign operator and said specific telephone number is a direct access to a specific service number, such as 'emergency', 'first aid', 'police', 'fire station' or 'guidance'.

8. A method according to claim 7, wherein it further comprises determining an approximate position of the mobile telephone unit by means of a cell from which the call is originating, and providing the requested service, such as guidance, to the caller accordingly.

9. A method according to any of the preceding claims, wherein it further comprises a step of updating the telephone number information stored in the mobile telephone unit memory means by an updating signal transmitted from the local operator network.

10. A method according to any of the preceding claims, wherein it further comprises a step of selecting a preferred language by which the service is to be given in the local operator network.

11. A mobile telephone unit comprising:
memory means for storing predetermined telephone numbers of various local operators and/or local services,
control means for determining the operator used and for selecting a proper predetermined local telephone number or numbers among said numbers stored into the memory means of the mobile telephone unit in accordance with the local operator determined to be used at the moment,
activating means for activating said predetermined telephone number or telephone numbers stored into the memory means, wherein the user of the mobile telephone unit is facilitated to access the specific predetermined telephone number without any knowledge of the actual telephone number.

12. A mobile telephone unit according to claim 11, wherein the activating means comprises a special keying button.

13. A mobile telephone unit according to claim 11, wherein the activating means comprises an option in the mobile telephone menu or a preset fast access code arranged to be selected by control button means of the mobile telephone unit.

14. A mobile telephone unit according to claim 11, wherein the activating means compri-

ses means for voice activation.

15. An arrangement in mobile telephone networks used by at least one mobile telephone unit, wherein one local network comprises

switching means of a local operator controlling the local network,

means for registering and switching on a mobile telephone unit as it enters the local network,

means for transmitting a predetermined telephone number or numbers used in the local network to said mobile telephone unit entered to the local network, and

the mobile telephone unit comprises

memory means in the mobile telephone unit for storing said telephone number or numbers transmitted by the local network, and

activating means enabling the use of said transmitted and stored telephone number or numbers when a need to access the predetermined telephone number exists.

16. A mobile telephone unit according to claim 15, wherein the activating means comprises a special keying button.

17. A mobile telephone unit according to claim 15, wherein the activating means comprises an option in the mobile telephone menu or a preset fast access code arranged to be selected by control button means of the mobile telephone unit.

18. A mobile telephone unit according to claim 15, wherein the activating means comprises means for voice activation.

19. An arrangement according to any of claims 15...18, wherein the switching means of the local operator further comprises means for updating the telephone number information stored in the mobile telephone unit memory means by an updating signal transmitted via the local operator network.

20. An arrangement according to any of claims 15...19, wherein it further includes means for determining an approximate position of the mobile telephone by means of the cell from which the call is originating.

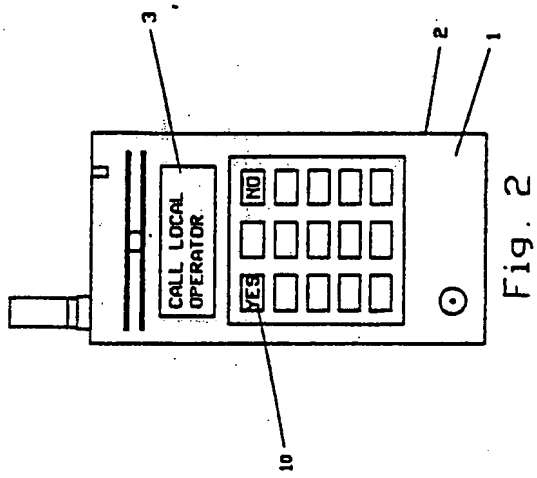

Fig. 2

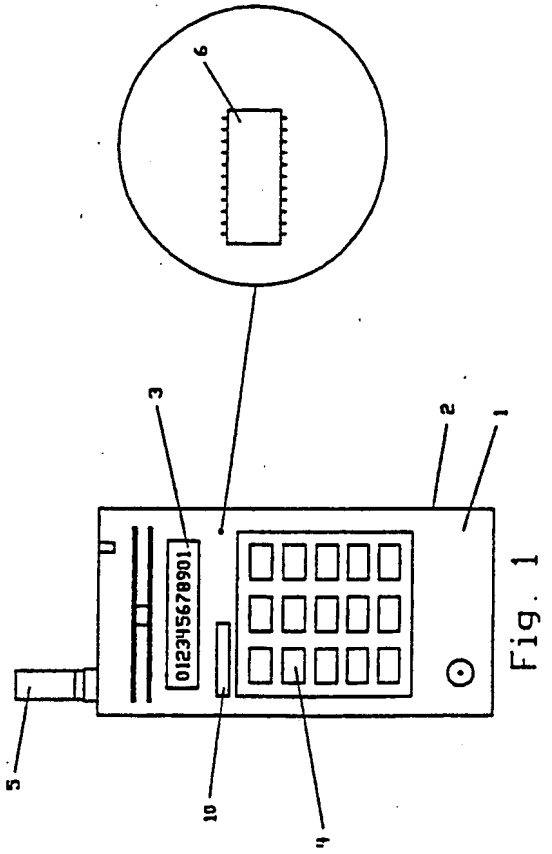

Fig. 1

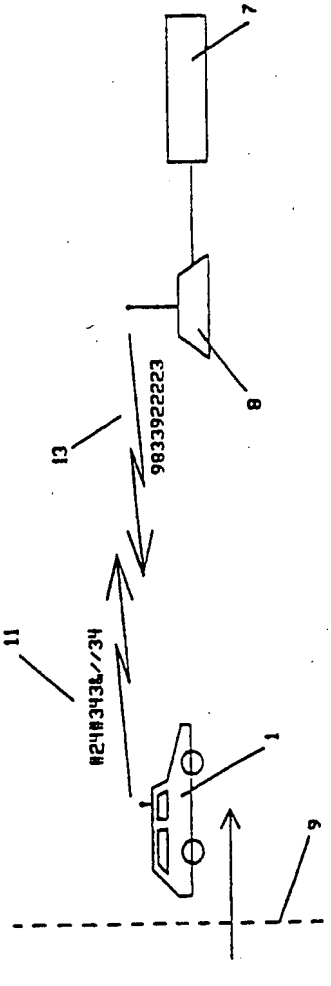

Fig. 3

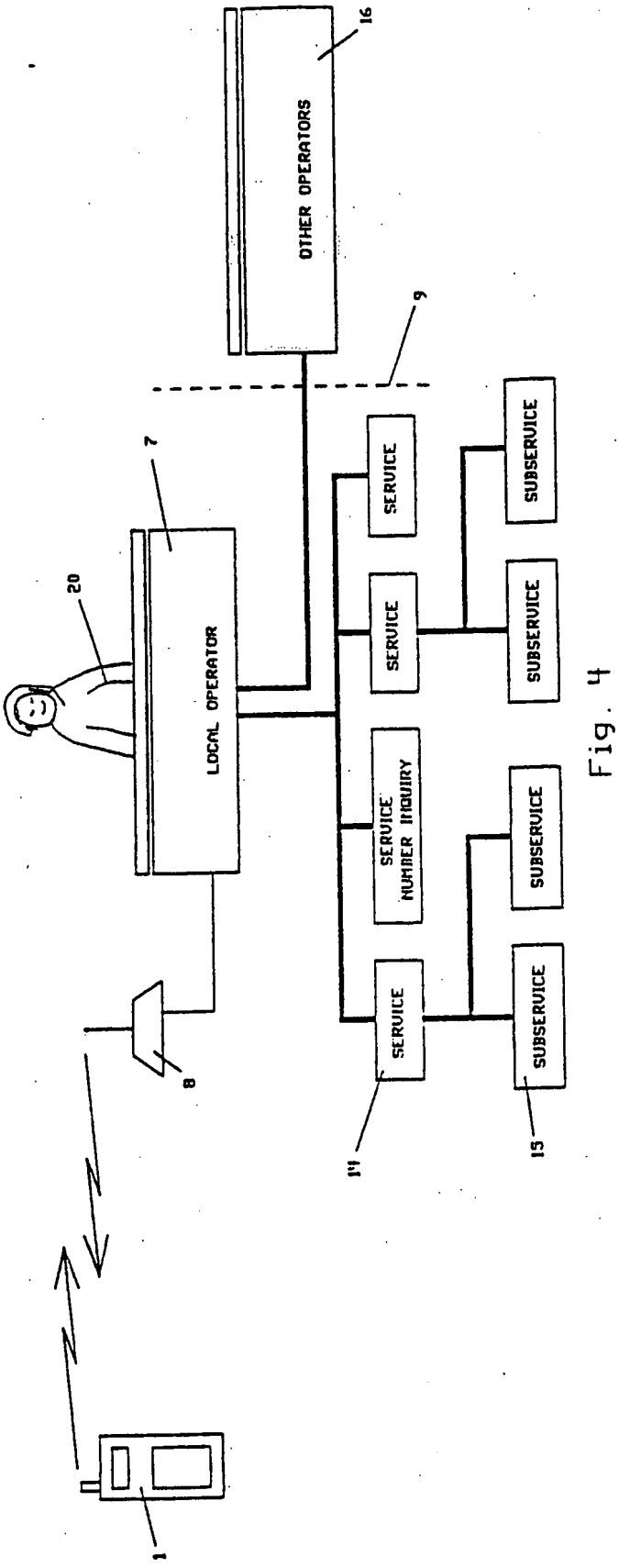

Fig. 4

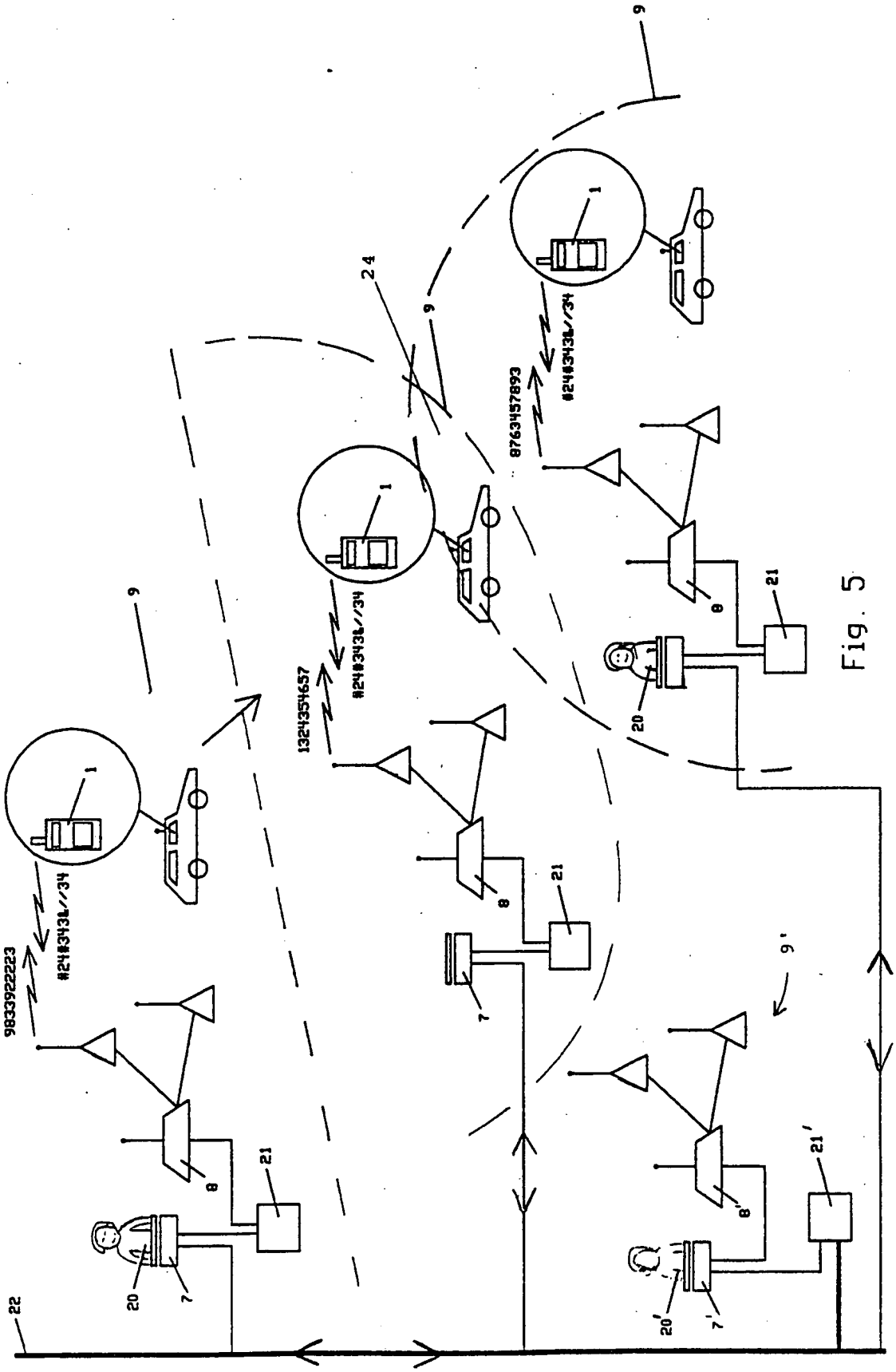

Fig. 5

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04Q 7/22, H04M 3/44 — A3

(11) International Publication Number: WO 98/23108

(43) International Publication Date: 28 May 1998 (28.05.98)

(21) International Application Number: PCT/EP97/06440

(22) International Filing Date: 18 November 1997 (18.11.97)

(30) Priority Data:
964621 19 November 1996 (19.11.96) FI

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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

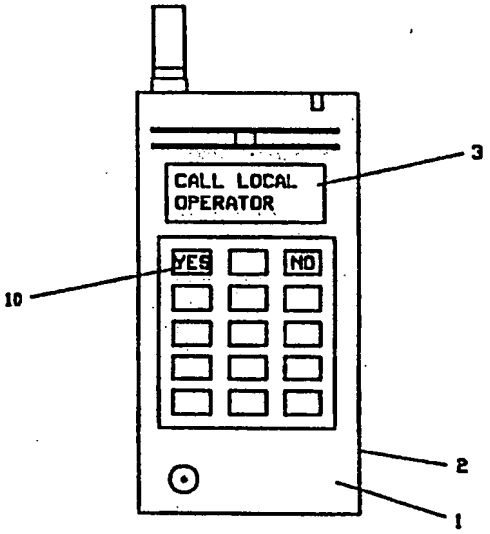
Published

With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(88) Date of publication of the international search report:
17 September 1998 (17.09.98)

(54) Title: METHODS AND APPARATUS FOR ACCESSING TELEPHONE NUMBERS



(57) Abstract

The present invention relates to a method for accessing a specific telephone number in a net of a local operator by a mobile telephone. According to the method predetermined telephone numbers of various local operators and/or local services are stored into memory means of the mobile telephone unit and a proper predetermined local telephone number(s) is selected among said telephone numbers stored into the memory means of the mobile telephone. Said selection is performed by control means of the telephone in accordance with the local operator used at the moment. Said predetermined telephone number is activated by activating means provided on the mobile telephone, wherein the user of the mobile telephone is facilitated to access the specific telephone number without any knowledge of the actual telephone number. The invention relates further to a mobile phone and to an arrangement realizing the inventive method.

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INTERNATIONAL SEARCH REPORT

Inter[redacted] Application No
PCT/EP 97/06440

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q7/22 H04M3/44

According to International Patent Classification (IPC) or to both national classification and IPC

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Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04Q H04M

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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 717 574 A (AT & T CORP) 19 June 1996	1-7,9, 10,15-19
Y	see column 3, line 32 - column 5, line 31	8,20
A	see column 5, line 52 - column 7, line 12 see claims 1-4	11-14
X	WO 96 19908 A (MOTOROLA INC) 27 June 1996	2-4, 15-17
Y	see page 3, line 2-10 see page 4, line 6 - page 8, line 8 see claims 1-10	8,20
A	EP 0 562 890 A (HUTCHISON MICROTEL LIMITED) 29 September 1993 see column 2, line 51 - column 6, line 44	1,9,15, 19

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29 July 1998	04/08/1998

Name and mailing address of the ISA	Authorized officer
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A	US 5 509 060 A (HALL STEVEN A ET AL) 16 April 1996 cited in the application see column 3, line 32 - column 5, line 14 see column 6, line 66 - column 7, line 24	10

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Information on patent family members

Inter[illegible]l Application No
PCT/EP 97/06440

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0717574	A	19-06-1996	CN	1132992 A	09-10-1996
			FI	956009 A	16-06-1996
WO 9619908	A	27-06-1996	US	5602901 A	11-02-1997
			AU	691047 B	07-05-1998
			AU	3895995 A	10-07-1996
			BR	9510014 A	28-10-1997
			CN	1171189 A	21-01-1998
			EP	0799555 A	08-10-1997
			FI	972614 A	18-06-1997
			GB	2309617 A	30-07-1997
			NO	972758 A	16-06-1997
EP 0562890	A	29-09-1993	NONE		
US 5509060	A	16-04-1996	AU	682401 B	02-10-1997
			AU	7777994 A	25-05-1995
			BR	9404667 A	11-07-1995
			CA	2134485 A	20-05-1995
			CN	1111427 A	08-11-1995
			EP	0654930 A	24-05-1995
			JP	7203032 A	04-08-1995
			NO	944236 A	22-05-1995
			NZ	264943 A	26-05-1997
			SG	44445 A	19-12-1997